

Smart Skies			
2009 Science			
Core Curriculum Content Standards			
New Jersey Science			
Grades 5-6			
Activity/Lesson	State	Standards	
Fly by Math	NJ	SCI.5-6.5.2.6.E.a	An object's position can be described by locating the object relative to other objects or a background. The description of an object's motion from one observer's view may be different from that reported from a different observer's view.
Fly by Math	NJ	SCI.5-6.5.2.6.E.2	Describe the force between two magnets as the distance between them is changed.
Fly by Math	NJ	SCI.5-6.5.2.6.E.c	Friction is a force that acts to slow or stop the motion of objects.
Fly by Math	NJ	SCI.5-6.5.4.6.A.3	Predict what would happen to an orbiting object if gravity were increased, decreased, or taken away.
Line Up with Math	NJ	SCI.5-6.5.2.6.E.a	An object's position can be described by locating the object relative to other objects or a background. The description of an object's motion from one observer's view may be different from that reported from a different observer's view.
Line Up with Math	NJ	SCI.5-6.5.2.6.E.c	Friction is a force that acts to slow or stop the motion of objects.
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Grades 7-8			
Activity/Lesson	State	Standards	
Fly by Math	NJ	SCI.7-8.5.1.8.B.1	Design investigations and use scientific instrumentation to collect, analyze, and evaluate evidence as part of building and revising models and explanations.
Fly by Math	NJ	SCI.7-8.5.1.8.B.b	Mathematics and technology are used to gather, analyze, and communicate results.
Fly by Math	NJ	SCI.7-8.5.1.8.B.2	Gather, evaluate, and represent evidence using scientific tools, technologies, and computational strategies.
Fly by Math	NJ	SCI.7-8.5.2.8.D.a	When energy is transferred from one system to another, the quantity of energy before transfer equals the quantity of energy after transfer. As an object falls, its potential energy decreases as its speed, and consequently its kinetic energy, increases. While an object is falling, some of the object's kinetic energy is transferred to the medium through which it falls, setting the medium into motion and heating it.

Fly by Math	NJ	SCI.7-8.5.2.8.D.1	Relate the kinetic and potential energies of a roller coaster at various points on its path.
Fly by Math	NJ	SCI.7-8.5.2.8.E.a	An object is in motion when its position is changing. The speed of an object is defined by how far it travels divided by the amount of time it took to travel that far.
Fly by Math	NJ	SCI.7-8.5.2.8.E.1	Calculate the speed of an object when given distance and time.
Fly by Math	NJ	SCI.7-8.5.2.8.E.b	Forces have magnitude and direction. Forces can be added. The net force on an object is the sum of all the forces acting on the object. An object at rest will remain at rest unless acted on by an unbalanced force. An object in motion at constant velocity will continue at the same velocity unless acted on by an unbalanced force.
Fly by Math	NJ	SCI.7-8.5.2.8.E.2	Compare the motion of an object acted on by balanced forces with the motion of an object acted on by unbalanced forces in a given specific scenario.
Fly by Math	NJ	SCI.7-8.5.4.8.A.4	Analyze data regarding the motion of comets, planets, and moons to find general patterns of orbital motion.
Line Up with Math	NJ	SCI.7-8.5.2.8.D.a	When energy is transferred from one system to another, the quantity of energy before transfer equals the quantity of energy after transfer. As an object falls, its potential energy decreases as its speed, and consequently its kinetic energy, increases. While an object is falling, some of the object's kinetic energy is transferred to the medium through which it falls, setting the medium into motion and heating it.
Line Up with Math	NJ	SCI.7-8.5.2.8.D.1	Relate the kinetic and potential energies of a roller coaster at various points on its path.
Line Up with Math	NJ	SCI.7-8.5.2.8.E.a	An object is in motion when its position is changing. The speed of an object is defined by how far it travels divided by the amount of time it took to travel that far.
Line Up with Math	NJ	SCI.7-8.5.2.8.E.1	Calculate the speed of an object when given distance and time.
Line Up with Math	NJ	SCI.7-8.5.2.8.E.2	Compare the motion of an object acted on by balanced forces with the motion of an object acted on by unbalanced forces in a given specific scenario.
Line Up with Math	NJ	SCI.7-8.5.4.8.A.3	Predict how the gravitational force between two bodies would differ for bodies of different masses or bodies that are different distances apart.
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Grades 9-12			
Activity/Lesson	State	Standards	
Fly by Math	NJ	SCI.9-12.5.1.12.A.3	Use scientific principles and theories to build and refine standards for data collection, posing controls, and presenting evidence.
Fly by Math	NJ	SCI.9-12.5.1.12.B.1	Design investigations, collect evidence, analyze data, and evaluate evidence to determine measures of central tendencies, causal/correlational relationships, and anomalous data.
Fly by Math	NJ	SCI.9-12.5.1.12.B.b	Mathematical tools and technology are used to gather, analyze, and communicate results.
Fly by Math	NJ	SCI.9-12.5.1.12.B.d	Scientific reasoning is used to evaluate and interpret data patterns and scientific conclusions.
Fly by Math	NJ	SCI.9-12.5.2.12.D.a	The potential energy of an object on Earth's surface is increased when the object's position is changed from one closer to Earth's surface to one farther from Earth's surface.
Fly by Math	NJ	SCI.9-12.5.2.12.D.1	Model the relationship between the height of an object and its potential energy.
Fly by Math	NJ	SCI.9-12.5.2.12.E.a	The motion of an object can be described by its position and velocity as functions of time and by its average speed and average acceleration during intervals of time.
Fly by Math	NJ	SCI.9-12.5.2.12.E.1	Compare the calculated and measured speed, average speed, and acceleration of an object in motion, and account for differences that may exist between calculated and measured values.
Fly by Math	NJ	SCI.9-12.5.2.12.E.b	Objects undergo different kinds of motion (translational, rotational, and vibrational).
Fly by Math	NJ	SCI.9-12.5.2.12.E.c	The motion of an object changes only when a net force is applied.
Fly by Math	NJ	SCI.9-12.5.2.12.E.d	The magnitude of acceleration of an object depends directly on the strength of the net force, and inversely on the mass of the object. This relationship ($a=F_{net}/m$) is independent of the nature of the force.
Fly by Math	NJ	SCI.9-12.5.2.12.E.4	Measure and describe the relationship between the force acting on an object and the resulting acceleration.
Fly by Math	NJ	SCI.9-12.5.4.12.A.4	Analyze simulated and/or real data to estimate the number of stars in our galaxy and the number of galaxies in our universe.
Line Up with Math	NJ	SCI.9-12.5.2.12.D.a	The potential energy of an object on Earth's surface is increased when the object's position is changed from one closer to Earth's surface to one farther from Earth's surface.
Line Up with Math	NJ	SCI.9-12.5.2.12.D.1	Model the relationship between the height of an object and its potential energy.

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